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BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Paper No. 34

Application Number: 09/171,885
Filing Date: October 28, 1998
Appellant(s): CUBICCIOTTI, ROGER S.

Kathleen Tyrrell
For Appellant

EXAMINER'S ANSWER

This is in response to the appeal brief filed 5-16-03.

(1) Real Party in Interest

A statement identifying the real party in interest is contained in the brief.

(2) Related Appeals and Interferences

A statement identifying the related appeals and interferences, which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

(3) Status of Claims

The statement of the status of the claims contained in the brief is correct.

(4) Status of Amendments After Final

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

(5) Summary of Invention

The summary of invention contained in the brief is correct.

(6) Issues

Upon reconsideration, the rejection of claims 36, 39 and 40 under 35 U.S.C 102(b) as being anticipated by Morgan Jr. et al & claims 34, 35, 37 and 38 under 35 U.S.C. 103(a) as being obvious over Morgan Jr. et al has been withdrawn. Accordingly, issues on Appeal are whether:

Claims 34, 35, 37 and 38 are unpatentable under 35 U.S.C. 102(b) as being anticipated by Morgan Jr. et al (U.S. Patent No. 5106,951).

Claims 36, 39 and 40 are rejected as unpatentable under 35 U.S.C. 103(a) as being obvious in light of Morgan Jr. et al (U.S. Patent No. 5106,951).

(7) Grouping of Claims

The appellant's brief contains a statement that claims stand or fall together.

(8) Claims Appealed

The copy of the appealed claims contained in the Appendix to the brief is correct.

(9) Prior Art of Record

5,106,951	Morgan Jr. et al.	4-1992

(10) Grounds of Rejection

The following ground(s) of rejection are applicable to the appealed claims:

Claim Rejections - 35 USC § 102

Claims 34, 35, 37 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Morgan, Jr. et al. (5,106,951; hereafter '951).

'951 discloses drug/carrier complexes and a method of administering a drug via a drug/carrier complex where a drug binds to polymeric carrier to form a prodrug complex that is capable of allowing drug dissociation from the polymeric carrier such that the drug retains its ability to bind to a site on or within a target cell. The examiner takes the position that the "antibody csDBM complex" of'951 is considered an antibody fragment that makes up the synthetic receptor. Since '951 state that the drug's ability to bind to a higher affinity site on or within the target cell is retained (abstract; C4 L43-C5, L25; C8, L30-40; C18, L43-48), the conjugate of '951 binds preferentially to the "pathophysiologic receptor" (the high affinity site on or within the target cell). '951 also disclose that the drug-conjugate is not exposed to derivatization conditions that might compromise the potency of the drug (i.e., the drug is immobilized and is protected from metabolism which would increase its half-life over administration of the drug alone) (C4, L43-50). '951 further disclose that targeting proteins may be attached to the conjugate. (C7, L10-19, 30-37). The carriers of '951 may also bind more than one drug (C10, L62-66). Column 5, lines 11-17 discloses the "csDBM is specifically designed to fit the drug molecule and undergo multiple non-covalent interactions with a drug". Thus, the limitations reciting that the drug is specifically bound to the synthetic receptor via non-covalent interactions between the selected drug and the synthetic receptor are met by '951. The methods used to identify the conjugate are not considered patentably distinct, as they are intended use limitations. Furthermore, the antibodies of '951 would be really identifiable by the instant methods.

Claim Rejections - 35 USC § 103

Claims 36, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan Jr. et al. (5,106,951; hereafter '951).

The teachings of '951 have been described above (102 rejection). '951 do not specifically state that the carriers of '951 may bind multiple drugs wherein the drugs are different. '951 do state that the carriers have multiple drug-binding regions capable of binding multiple drug molecules. Therefore, it would be obvious to one skilled in the art at the time of the invention to design the conjugates of '951 wherein the domains would be different would be capable of binding more than one drug where the drugs are different with the expectation that administering more than one drug to treat a condition would result in an additive treatment effect with the motivation of protecting the drug against metabolism or other factors that might reduce potency.

(11) Response to Argument

Claims 34, 35, 37 and 38 are rejected under 35 U.S.C. 102(b) as being anticipated by Morgan, Jr. et al. (5,106,951; hereafter '951).

Applicants state that instant claims require a synthetic receptor selected form antibodies, antibody fragments, oligonucleotides and oligosaccharide that binds to the drug via a saturable, non-covalent interaction. Applicants agree that csDBM of Morgan, Jr. et al is designed to fit the drug by combining multiple non-covalent interactions between functional groups on the drug and opposing functional groups on the csDBM. However, applicants argue that csDBM is a molecule that has a form opposite and complementary to that of a drug or has functionalities that are opposite and complementary in structure to a drug molecule. Applicants' arguments are not found persuasive because admittedly the csDBM of Morgan Jr. et al binds to the drug moiety via

a non-covalent fashion and applicants do not claim the argued features of csDBM such as the form of csDBM. Applicants argue that no moiety termed a drug-binding molecule of complementary structure is involved in the specific binding identified by drug to the selected synthetic receptor. Applicants argue that the reference fails to teach a receptor selected from the group consisting of antibodies, antibody fragments, oligonucleotides and oligosaccharide. Applicants further argue that the term "antibody fragment" is an art known term and should be given broadest possible interpretation consistent with specification.

Applicants' arguments are considered but not found persuasive because while it is true that the meaning of claims of issued patents are interpreted in light of the specification, during the examination, claims must be interpreted as broadly as their terms reasonably allow. In other words, the words of the claim must be given their plain meaning unless applicant has provided a clear definition in the specification. In this regard, applicants agreed that instant specification does not provide a definition for "antibody fragment". In the absence of such, an antibody is nothing but a protein (polypeptide) and an antibody fragment includes peptide fragments. Morgan Jr et al does not explicitly state antibody fragment, and instead teach that aromatic or charged amino acids of an antibody or a protein such as albumin forms csDBM structure that is capable of binding the drug moiety (C 10, L 3-9). Further, in one embodiment of their invention Morgan Jr. et al discloses that an aromatic drug is non-covalently bound to one or more aromatic groups on the an oligopeptide or analog thereof, resulting in a most stable binding than other csDBM-drug complexes. Furthermore, Morgan Jr discloses that the oligopeptides contain natural or unnatural amino acids. Thus, despite the fact that Morgan Jr does not use the term antibody fragment, the teaching of oligopeptides that constitute csDBM reads antibody fragments because

antibodies are made up of peptides and oligopeptides. With respect to applicant's argument that antibody fragment is an art recognized term that contains an idiotype or antigen binding region, which includes F(ab')2 fragment produced by pepsin digestion and a reducing agent, instant claims do not recite the function of antibody fragment and the proteins produced by papain or pepsin digestion (as argued) still result in smaller protein, peptide fragments and oligopeptides. Accordingly, given their plain meaning the antibody fragment includes oligopeptides and thus read on csDBM of Morgan Jr et al. Applicants argue that instant interpretation of antibody-csDBM of Morgan Jr to meet 'antibody fragment" is clearly inconsistent with the teachings of the reference because binding of csDBM moiety to an antibody fragment would not be taught by Morgan Jr if the term antibody fragment was meant to already encompass the csDBM. However, the argument is persuasive because instant claim does not exclude the presence of an antibody along with an antibody fragment. Next, Morgan Jr clearly explains that appropriate juxtaposition of aromatic as well as charged amino acids may occur in antibody or carrier protein like albumin, that may form a csDBM structure capable of binding drugs. Thus, the teachings of Morgan Jr do allow for a csDBM moiety to be the same as antibody. Therefore, for the reasons above, the rejection has been maintained.

Claim Rejections - 35 USC § 103

Claims 36, 39 and 40 are rejected under 35 U.S.C. 103(a) as being unpatentable over Morgan Jr. et al.

Applicants argue that instant claims clearly do not require the drug binding csDBM of Morgan Jr in the specific binding of a selected drug to the identified synthetic receptor.

Applicants argue that csDBM is essential for the invention of Morgan Jr. and the removal of the same clearly changes the principle of operation of the immunoconjugate of Morgan Jr. et al. However, as explained in detail above csDBM of Morgan Jr reads on the instant antibody fragment and instant claims do not exclude the presence of an antibody along with the drug and the specific receptor. Thus, the teaching of antibody-csDBM-drug complex by Morgan Jr. is still consistent with the instant claimed invention. Besides, applicants merely argue that csDBM is not same as antibody fragment but fails to show how the csDBM of Morgan Jr. differs from the claimed receptor i.e., structurally or functionally. Morgan Jr. teaches that the carriers of the drug-csDBM conjugate have multiple drug-binding regions capable of binding multiple drug molecules. Therefore, it would be obvious to one skilled in the art at the time of the invention to design the conjugates of Morgan Jr. wherein the domains would be different would be capable of binding more than one drug where the drugs are different with the expectation that administering more than one drug to treat a condition would result in an additive treatment effect with the motivation of protecting the drug against metabolism or other factors that might reduce potency.

In view of the above explanation that csDBM reads on an antibody fragment and also the teaching of Morgan Jr that a antibody or a protein can itself be a csDBM, it is the position of the examiner that instant method of preparing a prodrug complex is prima facie obvious from the teachings of Morgan Jr.

Communications between appellant and examiner subsequent to final rejection of July 16, 2002 and the amendment of October 16, 2003.

Applicants state that the amendments dated 10-16-02, deleting the term 'antibody fragment" should have been entered because the term was a part of markush group, the entire list of which should have been searched by the examiner after the submission of the claims in November of 2001 and election of this group in the restriction in March of 2002. However, as explained in the advisory action dated 12-3-02, the deletion of the above limitation changes the scope of the claims and thus requires further search.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Lakshmi S Channavajjala
Examiner
Art Unit 1615February 20, 2004

Conferees

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